10: d'Orleans--356-357 T-3 (1891-92) 1894 Laos
116, 114, 136, 137

"The fauna of Indo-China has been studied in so much detail by the expeditions of Garnier, Monhot, Neïs, Harmand, and others, that I cannot do better than refer the reader whom this subject may happen to interest, to the records of their researches; and with regard to the flora it is very varied, among the most interesting features of it being the beautiful parasite orchids, some rose and others yellow. The country is [357] very well wooded, too, and I have been able to bring back some forty specimens of wood, chief among which I may mention the teak, called the mai sok, which grows in large quantities on the banks of the Mekong, a few days above Luang Prabang, near Kiangsen, and below the city, near Paklay."

10: d'Orleans--357 T-3 (1891-92) 1894 Laos
116, 137, 241, 439

"At the present time two vegetable products are exported from Luang Prabang, one being cardamome and the other benzoin, the latter having recently decreased 50 per cent. in value on the Bangkok market, doubtless because this perfume is now extracted from hippuric acid and other matters by chemical processes, while in time the flora of the country, which is very rich in other wild plants highly perfumed, will doubtless lend itself to fresh sources of industry.

In addition to the native products it will be easy to introduce fresh cultivations, such as the pepper tree, which already thrives in Annam, the vine, which grows wild on the plateau of the Poûon, and fruit trees of various kinds."

69: Lewis T-5 (1950) 1951 AM1 Indochina
Laotians AM8

ooo tasted of earth and bitter herbs when a commotion aroused us. Hurrying from the restaurant we saw Dupont's dog busy with carrion in a nearby field, surrounded by an excited huddle of vultures for whose benefit it had been exposed there. Dupont's cries of horror were interrupted by the whistle of the convoy-commander, who this time signalled for all officers to gather round
494 him. He told them that seventy Issaraks were reported to be in
669 ambush, awaiting us at Kilometre 115 — about twenty miles further
725 on. They were turned out in new American uniforms, he said, and were well armed. At Kilometre 115 a cross-country track leading from Siam into Viet-Nam crossed our route. It occurred to both Dupont and myself that if this report was several hours old, it was not likely that the Issarak would be in the place where they were first seen. However, the official view taken was that they would not have moved more than five kilometres down the road in our direction, because orders were given for the infantry escort to dismount from their lorries at Kilometre 110 and to precede the convoy on foot for the next five kilometres. We noticed, too, that the officer assumed that the Issarak, if they had moved at all, would have inevitably marched towards us, and not in the other direction, because, once Kilometre 115 had been reached, the danger would be officially declared at an end, and the infantry ordered back into their lorries.

137 We now entered a country of low, bare hills; a whitish landscape, rarely animated by wandering pink-skinned buffaloes. In the hollows there were islands of splendid vegetation — flamboyant trees, arranged as if by design, with giant ferns and feathery bamboos. Peacocks gleamed in abandoned paddy fields, and storks, flapping away at our approach, trailed their legs in pools of yellow marsh-water. The vegetation was sensitive to quite small variations in altitude. The valley-bottoms were choked with bamboo thickets, and slender, segmented canes, wreathed in blue convolvulus, curved over our path like coachmen's whips, flicking us as we passed beneath. At this level the ditches were full of dead butterflies

[1] i.e., "free men" of Laos and Cambodia -- Analyst

69: Lewis T-5 (1950) 1951 AM1 Indochina
Laotians AM8

which seemed to have completed their lives' span while in the act of drinking. But a climb of only a few hundred feet was enough to break right out of this hot-house profusion; to pass through the curtains of liana and to reach the first pines.

Approaching the portentous kilometre, the road became steadily worse. It was only just wide enough for the six-wheelers to pass and there were frequent tyre-bursts. Whenever a vehicle was put out of action, it was manhandled off the road and left to its own devices. There was continual trouble with the bridges, which were temporary affairs, put up at the end of the rainy season and only intended to last until the weather broke again. The most rickety-looking of the bridges had to be tested first with a jeep, followed by an unladen lorry. When this precaution was neglected, a lorry loaded with supplies crashed through and fell into the river below. This meant a painful detour through the water for the rest of the convoy. Several vehicles also got stuck and had to be hauled out. Any of these moments would have provided an ideal opportunity for an attack.

The Meo dog suffered from the heat just as badly as, according to report, its original owner would have done. Its tongue lolled from its mouth and, laying its head either on Dupont's lap or on mine, it dribbled on our bare knees. It could not stand the dust, and wetted us further with its continual sneezings.

Some of the drivers were showing signs of tiredness, and probably nervous strain. The standard of driving was going down. We were once again in the bamboo thickets, and the road was no better than a ledge round the flank of a low hill. On our right was a precipice, but the vegetation was so thick that you could get no idea of the drop. Dupont, having profited by casualties in front, had now worked his way up to a position immediately behind the last of the lorries, and we were nosing our way round the hill, keeping a look-out for occasional gaps in the road left by subsidences, when the lorry ahead suddenly turned off the road and went over the side. Gently, almost, it was lowered from sight amongst the bamboos.

China Geographical Service /Service géographique de l'Indochine/ and the road surveys made by administrators at the heads of provinces nevertheless agree substantially in estimating the area of Laos at approximately 250,000 square kilometers, or about half that of France. 131 654

Population. This is the largest of the five countries in French Indo-China, and it is also the least densely populated. According to information collected on the spot, the population must be between a million and 1,200,000 inhabitants, a figure appreciably larger than the one figuring in the official documents, which estimate it to be only 800,000. Persons of the Laotian race in the strict /3/ sense form the majority. They populate the plains which are watered by the Mékong and its tributaries and the low altitude plateaus. The mountains are inhabited by highly diverse races belonging to various ethnic types, some of which are related to the Chinese, and others to the Tibetan branch, while still others are grouped under the generic name of "Khas." These various groups are scattered over the western side of the Annamitic Chain, the foothills of the plateau of Trân-Ninh and in the upper valley of the Mékong. 161 /162/ 162

The extremely low population density is to be explained by the Siamese and Chinese invasions in the course of the nineteenth century. The "Hos," plunderers who came from Yunnan, massacred the inhabitants after they had burned their villages and forced those who escaped famine or torture to settle in another region. The Siamese proceeded in a more methodical manner and depopulated the country by transporting inhabitants, livestock and elephants to the right bank of the Mekong and oftentimes taking them as far as the valley of the Ménam. 162 166 648* 175

Upper Laos. Upper Laos, a ramification of the Tibetan plateau, "is an inextricable tangle /4/ of wild and wooded mountains in the midst of which paths wind like gigantic Russian mountains" (1). The country has a savage look. These high 133 133 137

1. Dr. Lefèvre, "Le Haut-Laos" (Bulletin de la Société de Géographie commerciale, 1898).

mountain chains, which are cut here and there by deep valleys where torrents which are often invisible flow, are covered with

133 vast impenetrable forests and "the traveler sees only tall grass or
137 gigantic trees intertwined with lianas, then all at once, through a break in the foliage, he discovers the cascades of a river. This is the only noise to interrupt the impressive silence of these great forests" (2).

2. L. de Reinach, Le Laos, 1911.

133 Set against the huge mountain masses of Yunnan, this tormented region has always been the natural refuge of peoples driven out of India or China by famine, great invasions or religious discord, and its orography explains, in large measure, the multiplicity of tiny
/631/ states which were formed there throughout the ages. Its abrupt defiles radiate out and, so to speak, become calmed in the valleys of the Ménam, the Mékong and the Red River, and its principal substructure spreads out /5/ and ends in a vast plateau known as the plateau of Tran-Ninh, whose hillocks are planted with pine trees and drop suddenly from east to west.

In the southeast, however, the Tran-Ninh plateau clings "like an excrescence" to a long artery known as the Annamitic Chain which forms a distinct line of demarcation between Laos and Annam. This chain runs parallel to the coast in a northwest-southeast direction, and its peaks go all the way down to the Mékong by successive stages, first forming plateaus or folds of ground covered with thick forests (dông in Laotian), then slighter undulations where there are forest glades (khok in Laotian), and finally vast ricefields ending in the river.

The Mékong. This great river frontier which, over 800 kilometers of its length, marks the political separation of French Indo-China from the kingdom of Siam, gives life to Laos, together with its tributaries, "as the Nile constitutes Egypt." It fertilizes it with
/226/ its alluvia, feeds the native with its fish and guarantees transport for
/505/ his rafts and pirogues from north to south. But this liquid highway where nature seems to have taken pleasure in piling up obstacles and which is cut by numerous rapids and barred by waterfalls, can not be
/502/ /6/ regarded as usable for regular navigation over all of its length.

133 Fed by the melting snows of Tibet, the Mékong enters Laos through a capricious gorge, widens for a moment in the alluvia of an old lake basin and narrows again towards Luang-Prabang. Grandiose surroundings framed by the blue line of the far-off peaks give it what

132 a climatic dividing line. On the Annam side, in fact, each monsoon
133 has its rainy season, a fact which makes it possible to grow two rice
241 crops per year. On the Laotian side there is one rainy season and one dry season. The two are sharply separated, so that there can be only one crop. The chain runs parallel to the coast of Annam in a northwest-southeast direction, leaving Annam only a narrow strip of terrain, while it enables the Mékong to be joined on its left bank by watercourses which often stretch over wide extents. On the Annam side the slopes are steep and the valleys narrow. On the Laotian
137 side the slopes generally do not terminate so abruptly. They come down to the Mékong in successive stages, first forming plateaus or folds in the terrain which are covered with thick forests (Dong in Laotian), then gentler undulations on which there are forest glades (Khok in Laotian) and finally the vast ricefields which stretch down to the Mékong.

137 The large thick forests have the same wild appearance as in
132 northern Laos. Oftentimes they do not even let the sun's rays through, and form domes of foliage which hide the horizon.

The forest glades have two different aspects, depending on the season. During the rainy season there is shadow and often a carpet of verdure, while during the dry season the bare trees and the naked soil which is covered only with dead leaves and reflects the burning rays of the sun, give the appearance of a desolate and abandoned land.

133 The Annamitic Chain first separates the Nam-Nhang, a right-bank tributary of the Nam-Ka-Dinh, from the Song-Ca which flows into the Gulf of Tonkin near Vinh. It enters the province of Cammon, where its average altitude is 1000 to 1200 meters. The ridge of Tram Mua, on the road from Vinh to Pak-Hin-Boun, is at the 1280 meter level. In Cammon there are, so to speak, no forest glades. [47] [Illustration] [48] [Blank page] [49] for the plateaus themselves usually run down to the banks of the Mékong.

133 Of the latter, the most noteworthy is that of Na-Kaï or Pou-Hac,
137 the limits of which are formed by the courses of the Nam-Hin-Boun and of the Sé (1) -Bang-Faï. This vast plateau lies at an altitude

(1) Nam and Sé mean river. Nam is the term generally employed in northern Laos, and Sé in southern Laos.

of about 800 meters and, like the plain, is covered with forest

glades, but "instead of the oil trees, bogus teaks with their whitish foliage and their trunks deeply dented with wide grooves, we find gigantic, shade-giving pines; and instead of the bare, powdery or viscous soil, a fine level turf on which it is a pleasure to walk and where it is enjoyable to linger and slow one's pace" (2).

(2) Letter from Captain Rivière, reproduced by Captain Gosselin in Le Laos et le Protectorat français, 1900.

It is also a region of wild beasts, and the inhabitants of the muong of Ma-Ha-Saï come there every year to hunt elephants.

At the very source of the Sé-Bang-Faï there springs up a noteworthy peak about 1200 meters high from which many watercourses flow down to the Annam coast.

South of this point the Annamitic Chain drops to give way to the gap of Aï-Lao (about 410 meters in altitude) on the road from Savannakhet to Quang-Tri. Then the chain rises to form walls which are often more than 2000 meters high in the provinces of Saravane and Attopeu. Thus, Pou-Atouat has an altitude of about 2500 meters. It is an important orographic center from which spring the Sékhong and the Poyo, which belong to the Mékong basin, and also the Song-Buong, a tributary of the Song-Caï which is a coastal river of Annam.

Between the Sédone and the Sékhong, at about the 15th parallel, stands the remarkable plateau of the Bolovens, which takes its name from the Kha tribe which inhabits it. It is a mass about 100 kilometers in diameter, and its height varies between 600 and 1200 meters. Travelers who have explored it have extolled the mildness of the climate, the wealth of the vegetation, the beauty of the plains and the abundance of water, so [50] that Dr. Harmand suggested the idea that the plateau, which could easily be linked by road with the port of Tourane, might be made into the administrative center and sanatorium of our Indo-Chinese empire.

The part which the plateau may be called on to play in the future has been somewhat exaggerated. It would be imprudent to envisage it as a wonderland, [illustration here] an eldorado destined to a great future from the administrative, commercial and sanitary point of view. Today it is a plateau with well-cultivated slopes which yield fine harvests of cardamom and rice, as well as tobacco, cotton and Chinese nettles [ortie de Chine], and is inhabited by gentle, peaceful folk who live in handsome, well kept-up villages.

161 that the registered persons in the kingdom of Luang-Praban, who inhabit the right bank, have been included in this figure. The Laotian budget for 1898 anticipates revenues of 60, 000 piasters from personal taxes in Lower Laos, while only 35, 000 piasters are anticipated from Upper Laos, a fact tending to prove that the number of registered persons in Upper Laos is scarcely more than half those in Lower Laos.

Finally, as regards the average population density, it should be remembered that the density in France is 6, 700 inhabitants per 100 square kilometers. If the latter had a density equal to that of Laos, there would be a million inhabitants in France.

The muong of Khong has the highest population density in all Laos, or 1, 508 inhabitants per 100 square kilometers.

/303/ /Illustration at top/

CHAPTER VI

1. FLORA--FOREST RESOURCES AND THEIR EXPLOITATION

• 137 Since Laos has the same orographic center as Burma, Yunnan, Siam and the Malay Peninsula, the nature of the soil, the configuration of the land and the distribution of the various geological formations are also similar. It follows that its flora and, in general, all of its forest riches are like those of the above countries, which have long been studied from this particular point of view.

There are quite probably botanical studies of great interest to be made in Laos, where the flora is so varied and so rich that it has been called the "naturalist's paradise." Here, however, our purpose is quite a different one, and we shall merely try to enumerate the types of plants and trees which are already known and used as of /304/ the present time, leaving it to others who are more competent to identify the different varieties.

In addition to the arborescent varieties which will be listed further on, the forests contain many different types of plants and flowers, most of which are unknown and which are as noteworthy for the diversity of their colors and the grace of their forms as for their delicious perfumes. There are also mosses of great delicacy and sweetness, as well as dwarf and arborescent ferns with elegant serrations and harmoniously shaded colors varying from yellow to poppy-red.

137!

The trees also support incomparable wild orchids with strange flowers, and climbing or twining plants of every possible shape and color which are as graceful as they are delicate, which cross, intertwine and with their lianas form an inextricable jungle, a curtain of flowers, stems and foliage which moves at the whim of the winds and is so thick in certain spots that it casts an almost perpetual shadow (1).

(1) The exact nomenclature of these floral species is almost impossible to establish. We shall content ourselves with noting, among many others which are still unknown: the acacia, and principally the farnèse acacia; various kinds of lilacs; the double and single hibiscus, the African marigold and the zinnias, the lotus, the cockscomb, the marvel of Peru, the sunflower, several kinds of magnolias, syringa, camellias, etc.

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Various plants used for food, medicine and dye also grow in the forests, such as yams, taros, ginger, cardamom, annatto, curcuma, catechu (sisèt), Campeachy wood, wild indigo, etc., as well as trees and lianas which produce resins, oil lac, black and red lacquer, damarine (huile de bois), benzoin, wax, gums and rubber.

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Rice and maize are cultivated on the plateaus, low hills, mountainsides and in the valleys, as well as on the alluvial deposits of the Mekong. These form the basis of the natives' food supply and are essential elements in the manufacture of alcohol.

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The banks of the watercourses, which are covered by inundations every year and constantly fertilized by alluvial deposits, are [305] used for the cultivation of cotton, tobacco, indigo, castor oil plants, batatas, peanuts, manioc and vegetables and fruits such as onions, garlic, tomatoes, squash, melons, fennel, mustard, edible convolvulnses, sensitive d'eau, etc. In the gardens which are cultivated near the banks one also finds sugar cane, coconut palms, sugar palms, betel palms, latania palms, the poivrier bétel, the arborescent mulberry, peppers, coriander, mint, the citronella and [Illustration here] purslane. Here also are a large variety of fruit trees: banana trees (more than twenty-four varieties), cinnamon trees, fig trees, orange trees, tangerine trees, grapefruit trees, lemon trees, lime trees, pineapple trees, pomegranate trees, guava trees, mango trees, papaw trees, ebony trees (Diospyros ebenum), mangosteen trees, jack trees, durian trees, custard-apple trees, avocado trees, litchi trees, sapodilla trees (red balata), fayolliers (légumineuses), silk-cotton trees

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245 (bombax and callotropis), tamarind trees, jujube trees, cucumber trees, water chestnuts, etc.

In the north of Laos grow peach trees, plum trees, almond trees, [306] walnut trees, cherry trees, apple trees, pear trees, strawberry plants and medlar trees, the fruits of which are similar in taste to that of their counterparts in Europe, although they are neither as large nor as succulent as the latter.

On the edges of the forest, and sometimes even in the middle, there are also other wild fruit trees reminiscent of the plum tree, the cherry tree, the apple tree (a rose-apple tree with red or green fruits), the fig tree, the quince tree, etc. Their fruits have remained in a wild state or reverted to one because of a lack of adequate care, and are not edible. Their seeds, pits and stones have developed excessively, to the detriment of the pulp which remains tough, bitter or tasteless.

248 Finally, opium poppies, tea, ramie, hemp, etc. are cultivated
249 on the plateaus and in the high valleys.

Most European vegetables grow in Laos, in the gardens of the
241 Europeans. They are seeded at the end of the rainy season. Early varieties can be harvested and a new crop seeded well into July, but care must be taken to cover the beds during downpours, which occur frequently from May on.

The forests of Laos may have two characteristic forms, depending
134 on whether the soil is mountainous and composed of clay or limestone,
137 or else flat or slightly sloped and sandy, rocky or stony. In the first case the soil has a high percentage of vegetable matter, is moist and rich in humus and consequently covered with thick forests (Dong or Pa). In the second case it has a low percentage of vegetable matter, is hot and poor in humus and is covered with light forestation (Khok or Pa-hang).

A table contained in the Appendices (No. XX) gives the nomenclature of some sixty varieties of trees on which we have information. In addition to the trees which we cite, we should also note the bamboos, rattans and banana trees.

There are some twenty varieties of bamboo, in which the stalks vary from the size of the little finger to as much as thirty or even thirty-five centimeters in diameter. They sometimes reach a height
824 of twenty meters. There are six or seven varieties of rattan of different grades and sizes, but they are used only for local needs. Among the many wild banana trees, a few varieties such as the "Kok-Koue-Kene" yield a sort of fiber rather like abaca.

137 [307] Although we are able today to evaluate the forest wealth of Laos approximately and to compute its immense commercial value,

as yet we can regard it only in the light of a reserve for the future and hope that this future is imminent. [Illustration alongside text here] 137 000

The establishment of sawmills near the points where trees are felled is not to be recommended, particularly in middle and upper Laos. Any industry of this type could not yet find sufficiently large local outlets, because of the difficulty of transportation. Moreover, the natives use only axes and machetes for felling and cutting up trees, and they would never be willing to underwrite the cost of sawmills. The only remaining recourse, therefore, is exploitation for the coastal markets or for export, and the future obviously lies herein. But as long as there are no railways leading from the Mekong to the Annam coast, or steamers capable of traversing the river from Luang-Prabang as far as the island of Khone without trans-shipping their cargo, there can be no thought of felling trees where they grow in order to export them in the form of wood ready for industry (planks, billets, beams) nor, in consequence, of establishing sawmills in the Laotian interior.

[308] The only method at present practical would be to float the undressed logs downriver, either by themselves if their density permits or else by means of bamboo floats. These logs could be floated down to North Khone and then cut up on the island itself by means of sawmills driven hydraulically by the waterfalls. They could then be transported to Pnom-Penh or Saigon by steamship. 313

The above considerations would apply to the majority of the hardwoods which do not float by themselves. In the case of teak, pine and mock mahogany (mai-niom-pha), for example, there would be no difficulty in floating the undressed logs down from Xieng-Khong or even Tang-Ho, if we are to rely on a conclusive experiment performed in 1899. M. Lussan succeeded in bringing 170 undressed teak logs all the way from Luang-Prabang to Saigon, coming through the valley of the Me-Khok by way of Xieng-Sen (1).

(1) "This year the teak logs which M. Lussan is bringing down from the same region are said to represent about 600 cubic meters. When last heard from, the billets had left Khone (the island was crossed via the Decauville railway so as to avoid the rapids). Losses of billets at this time amounted to only 2-1/2 to 3 percent of the total number.

"The Superior Resident in Laos notes that an ingenious system of floating was used this year. The logs were tied together in groups of only three or four and launched into the current.

149: Reinach--409 G-3 (no date) 1901 AM1 Indochina Laotians AM8

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APPENDIX XX TABLE OF TREES

Laotian Name	Other names	Height in meters	Size (diameter) in meters	Uses	Subject to attack by insects	Habitat	Provinces	Observations
				A. RESINOUS TREES				
Mai-niang	Cai-dau-nuoc (Annamite) Dom-teal (Cambodian) Dipterocarpus alata	30 to 35	.6 to 1	Furniture, boards, framing; yields an oleoresin used to make torches and a mastic for caulking pirogues. Can yield about 20 liters of essential oil per year.	Yes	Thick forest	Lower Laos	Soft wood, yellowish in color, easily worked. Very common and well known to all Laotians. Lasts about 6 to 10 years, but can be preserved in dry, well-aired places.
Mai-sat	Dipterocarpus (?)	20 to 30	.6 to .8	Boards and ordinary traverse beams. Its oil is used in making torches.	Yes	Forest glades	Lower Laos	Soft wood, reddish-gray in color, of inferior quality. Very plentiful and well-grown; lasts 5 to 6 years, rots in earth.
Mai-sang	Cai-sao (Annamite) Dom-sapel (Cambodian) Hopea odorata	20 to 25	1 to 1.5	Boards and timbers. Could yield about 20 kilograms of a good resin per year.	No	Forest glades	Lower Laos	Softwood, brown, easy to work; very plentiful; average lasting qualities; resembles the ash; well-grown tree.

[Table continued over]

140; Reinach--410 G-3 (no date) 1901 AMI Indochina Laotians AMS
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Mai-khom		20 to 25	.8 to 1	Useless for cabinet work. The Laotians cut it into small pieces like the Mai-seng-khen for chewing with betel. Its oil is used for caulking pirogues and making torches.	No	Forest glades	Lower Laos Upper Laos	Very hard wood, dark red in color. Has often been mistaken for teak. Very plentiful, together with the Mai-tabeng it makes up the greater part of varieties in forest glades; unlimited life.
Mai-chik	Cai-chai (Annamite)	15	.4 to .5	Widely used for house columns. It yields 20 kilograms per year of a resin used by the Laotians for caulking.	No	Forest glades	Lower Laos Upper Laos	Hardwood, veined yellow in color, fine grain. Very plentiful. Unlimited life.

(1) It is essential to note that these trees can be used only if the sapwood is removed and only the heartwood used.

[112-113] Mai-tabeng	Cai-dap-tabeu (?) (Annamite) Dom-trac (?) (Cambodian) Dipterocarpus species (?)	30	.5	Little used in building. Passable boards and columns. Can yield some 20 liters of oil annually which is used for making torches and caulking pirogues.	No	Forest glades	Lower Laos	Fairly hard and resistant wood, reddish in color. Very plentiful. Long life. Resembles the Mai-niang, keeps better.
Mai-phek	Cai-thong (Annamite) Dom-sral (Cambodian) Pinaster	30 to 35	1 to 1.5	Various uses. Yields a whitish odorous resin which, when mixed with sticklac, produces varnish and certain mastics.	No	Plateaus and clear parts of forests	Upper Laos	Reddish wood with coarse fiber. Floats. Said to be inferior to other resinous varieties.

[table continued over]

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149. Reinach--411 G-3 (no date) 1901 AMI Indochina
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Mai-nam-kieng	Cai-sen (Annamite) Dom-crul (Cambodian) Melanorrhea laccifera (varnish-tree)			Yields a fine black varnish similar to lacquer. Would be suitable for cabinet work.			Lower Laos	Red wood, reminiscent of Brazilian rosewood. Very rare. Does not last under moist conditions.

B. TREES WITH WOOD SUITABLE FOR CABINET WORK

Mai-Kiempha	Mock mahogany	30	.6 to .7	Furniture, boards. Resembles the mahogany of Florida or Texas, used for cigar boxes.	Yes	Valleys and banks of water-courses	Lower Laos Upper Laos	Very beautiful soft-wood, pink in color. Fairly plentiful. Floats.
Mai-pousi or Mai-pousi-kien	Cai-bang-lang (Annamite) Lagerstroemia (?)	30	.6 to 1	Furniture, fine boards.	Yes	Thick forest	Lower Laos	White wood with slight gray tinge, not very resistant, fine grain. Very plentiful. Lasts about ten years, does not withstand rain.
Mai-thon	Cai-lim (Annamite) Mock walnut	30	.5 to .6	Boards, fine cabinet work.	Yes	Valleys and banks of water-courses	Lower Laos Upper Laos	Very beautiful brown wood, veined like the walnut which it resembles although darker. Very long life. Very plentiful. Very well-grown tree.

[Table continued over]

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Mai-kha-niem	Cai-trat (Annamite)	15 to 25	.5 to .6	Furniture, boards, pirogues.	No	Forest glades	Lower Laos	Resistant wood, slightly yellowish, fine grain, quite light, well-grown. Rather scarce. The tree bears very odoriferous yellow flowers.
Mai-lang-dam	Cai-mun (Annamite) Pon-heyeen (Cambodian) Diospyros ebenum Ebony	10 to 15	.3 to .4	Good for cabinet work. House traverse beams. Its fruit is used to make a black dye.	No	Thick forest	Lower Laos	Hardwood, black, heavy, non-floating, small, resembles ebony. Lasts about seven years. Plentiful.
[114-115]								
Mai-deng	Cai-huong (Annamite)	25	.6 to .7	Columns and posts for houses and pagodas. Furniture.	No	Forest glades	Lower Laos	Resistant, red, very well-veined wood. Highly esteemed, hard, difficult to work. Resembles rosewood somewhat. Very well-grown tree, well-known to the Laotians, plentiful.
Mai-te	Cai-go (Annamite) Grewdifera cochinchinensis	30 to 50	.6 to .7	Columns for houses and pagodas. Boards.	No	Forest glades	Lower Laos	Very hard wood, mahogany yellow, fine grain. Unlimited life. Plentiful. Edible fruit.

[table continued over]

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Mai-dou or Mai-dou-khao	Cai-boi-moc (Annamite)	30	.7 to .8	House columns, furniture, chests, cart axles.	No	Thick forest	Lower Laos Upper Laos	Beautiful, very hard wood, slightly reddish, very well-veined; reminiscent of the thuja. Quite hard to work. Unlimited life. Plentiful.
Mai-pam-set		20 to 35	.8	Very fine planks and columns.	No	Valleys and banks of water-courses	Lower Laos	Very hard wood, difficult to work.
Mai-khen-kin	Cai-sao-da (Annamite) Hopea (?)	30	.4	Very fine columns and traverse beams.	No	Thick Forest	Lower Laos	Very beautiful, very hard wood, highly resistant, yellowish in color, very heavy. Life would be unlimited. Plentiful.
Mai-ad	Dom-kmor-prey (Cambodian) Naucles orientalis (?) Jack-tree	10	.4	Columns, furniture and boxes. The bark is used for dyeing bonzes' clothing yellow.	No	Valleys and banks of water-courses	Lower Laos Upper Laos	Very pretty light wood, yellowish in color. Quite easy to work. Floats when dry. Noted especially for its fruit.
Mai-bob-khai			.9 to 1	Not used by the Laotians, the grain being too hard for their tools. Ought to make fine boards.		Forest glades	Lower Laos	Hardwood, whitish-yellow in color. Very well-grown. Plentiful.

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Mai-khe-chieng	Cai-trac (Annamite) Dom-grahung (Cambodian) Dalbergia (?)	15 to 20	.5 to .6	Used for cart axles and in the wheelwright's trade. Would be a good wood for cabinet work.	No	Thick forest	Lower Laos Upper Laos	Very hard wood, dark red veined with black, like the Brazilian rosewood. Unlimited life. Rather scarce. Respected by the Laotians because almost impossible to work with their tools.
Mai-pouai-lai	Cai-bang-lang (Annamite) Lagerstroemia (?)	30 to 40	1.5	Interior woodwork, furniture.	No	Low mountains, valleys	Upper Laos	Beautiful hardwood, gray with wavy veins like the maple. Medium in color between the ash and the beech. Difficult to work, gives a striking effect under varnish.
Mai-kan-luong		17 to 18	.6	Furniture and framing. Very good for woodworking.	No	Beside water	Upper Laos	Hardwood, yellow, good grain, easy to work.
Mai-som		16 to 17	.3 to .4	Furniture and framing.	No	Beside water	Upper Laos	White wood, straight grain, easy to work, quite plentiful.
[116-117]								
Mai-khe		24 to 25	.4 to .5	Furniture, framing, posts.	No	Large forests	Upper Laos	Hardwood, red heartwood; difficult to work; plentiful.
Mai-kn-bok	Dom-kaka (?) (Cambodian) Sindora cambriana (?)	18 to 19	.3 to .4	Used for turned pieces and long-lasting items.	No	Same	Upper Laos	Hardwood, brown with reddish reflections, fairly easy to work; very beautiful when polished.

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Mai-sak	Dom-smysac (?) (Cambodian) Tectona grandis Teak	30 to 40	.8 to 1.2	Framing, woodworking, cabinet work, boatbuilding.	No	Mountainsides and valleys	Upper Laos	Easy to work, reddish beautiful close grain, very well-grown, rotproof, floating. Edible fruit; sometimes replaces the betel nut in the betel masticatory.
Mai-khao-khvai				Excellent posts	No	Hillsides and valleys. Thick forests	Upper Laos	Hardwood, fine grain, unlimited life.
Mai-tchouang or Mai-khoumeng				Cabinet work.	No	Hillsides and valleys	Upper Laos	Wood which has the perfume of sandalwood. Used to make statues of Buddha.
Mai-dou-deng	Service tree (?)	30 to 35	1.5 to 1.8	Posts, pirogues, tools.	No	Mountainsides and valleys. Thick forest	Upper Laos	Excellent hardwood, with the look and qualities of the service tree, that is to say reddish brown with fine grain. Very well-grown, plentiful, fairly easy to work. Unlimited life.
Mai-sakham		20 to 25	.5	Posts, framing, boards.	No	Low slopes and valleys	Upper Laos	Good red wood, straight grain, quite scarce, easy to work.

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Mai-fene		25 to 30	1.2	Posts	No	Valleys	Upper Laos	Good wood, fairly difficult to work, much sought-after, rather scarce, long life.
Mai-kha-hioung		18 to 20	.25 to .35	Posts, framing.	No	Large Forests	Upper Laos	Hardwood, white, quite difficult to work, quite plentiful.

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Mai-khan-hok		30 to 35		Boards, traverse beams, laths.	No	Thick forest	Lower Laos	Hardwood, white with black heartwood, plentiful on the plateau of the Bolovens; edible fruit.
Mai-khen	Cai-sao (Annamite) Don-kaki (Cambodian) Hopea spuria (?)	.3 to .4	1 to 1.5	Used mainly in the construction of pirogues.	No	Thick forest	Lower Laos Upper Laos	Semi-hard wood, with beautiful fibers of a yellow color, very well-grown. Water-resistant. Lasts 12 to 15 years.
Mai-hang	Cai-sen (Annamite) Vatica (?)			Columns and mediocre traverse beams.	Yes	Forest glades	Lower Laos	Greatly resembles the Mai-khen-hin, but is neither as resistant nor as highly esteemed; unlimited life.
[118-119] Mai-tab-tao		10	.4 to .6	Mediocre traverse beams, very little used in building.	Yes	Forest glades	Lower Laos	Soft wood, yellowish in color, quite well-grown, little used, quite light; plentiful.

[table continued over]

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Mai-tieu		12	.5 to .6	Same as above.	Yes	Forest glades	Lower Laos	Very soft wood, white, slightly grayish, of inferior quality, cannot withstand rain; fine grain; well-grown tree. Lasts about 7 years.
Mai-koung		15	.6 to .8	Boards and traverse beams. The dried leaves are used to make pirogue roofs and partitions for Laotian houses.	Yes	Forest glades	Lower Laos	Fairly hard wood, slightly reddish, well-grown; plentiful.
Mai-kha-thang		25 to 30	.25 to .3	Beams	Yes	Forest glades	Lower Laos	Hardwood, slightly yellowish, plentiful, quite well-grown.
Mai-tong		35	.5	Coffin planks.	Yes	Forest glades	Lower Laos	Softwood, white, acid fruit; plentiful.
Mai-kang-seng		15	.6	Planks, studs for partition walls and doors.	Yes	Valleys and banks of water-courses	Lower Laos	Softwood, heartwood dark red; plentiful in the valleys.
Mai-man-pa		15	.25	House columns.	No	Thick forest	Lower Laos	Hard and resistant wood, grayish-yellow, fairly easy to work; plentiful, unlimited life.
Mai-hat	Cai-xnai (Annamite)	25	.4	Wooden bells, mediocre traverse beams and columns; little used in building.	No	Valleys and banks of water-courses	Lower Laos	Rather unresistant, yellowish-white wood; plentiful, unlimited life.

[table continued over]

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Mai-mok		.2 to .25			Forest glades	Lower Laos	Slightly yellowish wood, light, with fine grain; dwarf tree, bears large yellow flowers which are very odoriferous.
Mai-seng-kham		.5 to .6	Bark used by the Laotians for chewing with betel.		Forest glades	Upper Laos Lower Laos	Yellowish wood with quite fine grain; well-grown tree; not very plentiful.
Mai-si		.3 to .4			Forest glades	Lower Laos	Slightly grayish wood, quite close-fibered; well-grown tree; not very plentiful.
Mai-lieng		.6 to .7	Used only for making plowshares.	No	Thick forest	Lower Laos Upper Laos	Hard, knotty, red, rather dark wood; difficult to work with an ax, does not grow straight; not very plentiful; unlimited life.
Mai-souak		.6 to .7		No	Thick forest	Lower Laos	Very hard wood, very dark reddish-gray in color, well-veined, difficult to work; very well-grown tree.
[120-121]							
Mai-lam-sing		1 to 1.2		No	Valleys and banks of water-courses	Lower Laos	Hardwood, dark red, close-grained, difficult to work; well-grown tree; quite plentiful.

[table continued over]

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Mai-seng	Dom-khlaeng-nang (Cambodian) Strychnos nux-vomica		.5 to .6	Its wood, roots and leaves, with the exception of the pulp of its fruit, are used as a remedy against fever and snake bite.	No	Valleys and banks of water-courses	Lower Laos	Very hard wood, slightly reddish, difficult to work; well-grown tree, its seed is the nux vomica; not very plentiful.
Mai-som-hong		20 to 25	.9 to 1		No	Valleys and banks of water-courses	Lower Laos	Slightly grayish wood, difficult to work, cannot withstand rain; well-grown tree; not very plentiful.
Mai-lek	Yan (Annamite) Hopea ferrea (?)	20 to 25	.6 to .9	Railway ties. Piles for wharfs.	No	Thick forest	Lower Laos	Ironwood, very hard, mahogany in color.
Mai-thum-da		20 to 25	.6 to .8		No	Thick forest	Lower Laos	Very tall tree with blond heartwood. It is sought-after by the bonzes, who use it to make statues.
Mai-khao		18 to 20	.5 to .6	Boards, framing.	Yes	Thick forest	Lower Laos	White wood of inferior quality; lasts about five years.
Mai-miou	Chi-gno (Annamite) Dom-oor (Cambodian) Bombax and Ochlotropis Kapok cotton	15 to 20	.6 to .8	Not used as wood.	Yes	Banks of water-courses	Lower Laos	Quite unresistant wood. The tree yields cotton of excellent quality. It grows rapidly, and is very common.

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149: Reinach--429 G-3 (no date) 1901 AMI Indochina Laotians AM8

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Mai-padaeng		20 to 25	.8 to 1	Paneling.	No	Thick forest	Lower Laos	Beautiful wood, purplish-red heartwood, blackens upon exposure to air.
Mai-ka-eam		25	1	Building wood.	No		Lower Laos	Hard and resistant wood, resembles the Mai-tabeng; plentiful; unlimited life.
Mai-bi-mai		18 to 20	.6 to .8	Framing.	Yes		Lower Laos	Wood of inferior quality, hard but not very resistant, red in color; lasts from 6 to 10 years.
Mai-khai-ee		18 to 20	.6 to .8	Framing.	Yes		Lower Laos	Wood of inferior quality, hard but not very resistant, red in color; lasts for seven years.
Mai-nga-loi		15 to 18	.5 to .6	Interior woodwork.	Yes		Lower Laos	White wood, of inferior quality; lasts for 5 to 6 years.
Mai-sisiet	Catechu Acacia catechu	30	1.3	The bark alone, which forms catechu, is used for chewing with betel.	Yes	Valleys and low slopes	Upper Laos	The wood is good only for burning.
[122-123]								
Mai-kob-ee		8	.25 to .35	The bark alone is used in making a very resistant paper.	Yes	Valleys	Upper Laos	
Mai-ee		30	1.5	Framing and mediocre woodwork.	No	Low mountains and valleys	Upper Laos	Hard wood, fairly good, very light; not very plentiful.

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Mai-hiene		30	.8	Framing, posts, mediocre woodwork.	Only after ten years	Low slopes and valleys	Upper Laos	Good wood, straight grain; not very plentiful; very straight tree.
Mai-ka-kalang		25 to 30	.5 to .6	Posts and framing.	Yes	Low slopes and valleys	Upper Laos	Soft, reddish wood, easy to work; plentiful.
Mai-ca-ke		14 to 15	25 to 30	Used to make charcoal. Also used for short-lived projects.	Yes	Low slopes and valleys	Upper Laos	Softwood, white, good grain; plentiful.
Mai-li				Posts and columns			Upper Laos	Very hard wood, difficult to work.